Digestive Health

BY CHRISTY WEST

Clearing Sand From the Gut

Sand colic due to an accumulation of sand in the intestines accounts for up to 30% of all colics, often causing weight loss and chronic diarrhea. Psyllium has often been recommended as a laxative for clearing sand out of the intestines, although previous research results have been mixed as to its effectiveness. Allen Landes, DVM, of Equine Medical Service in Fort Collins, Colo., discussed the efficacy of a commercial psyllium/probiotic/prebiotic product (Assure and Assure Plus) on fecal sand clearance.

"There are three risk factors leading to sand accumulation: Soil type, pasture quality, and feeding practice," Landes noted. "As clinicians, we can only modify one of these (feeding practice). Our sand content at this study location was about 28%, but many nearby areas are more than 60% sand. Owners can visit http://websoilsurvey.nrcs.usda.gov/app to get more information on the sand content of their local soils and see if they have a sand problem."

Eight clinically healthy horses were kept on pasture and/or in stalls during the study, and they were supplemented with hay to maintain body weight. Their feces were screened for sand for seven days before any treatment. For 35 days they received 30 g of Assure (probiotic/prebiotic mix intended to improve the health of gut microflora) followed by 226 g of Assure Plus (probiotic/prebiotic with psyllium) per 454 kg (1,000 pounds) of body weight 12-15 hours later, according to the manufacturer's directions. No horses developed colic during the study.

Fecal sand output significantly increased (nearly doubling) by Day 4 of treatment and remained elevated through Day 31, reported Landes.

"These results suggest that this product may be an effective prophylactic treatment for sand enteropathy (intestinal disease) and sand colic when management alone is not sufficient to prevent intestinal sand accumulation," he concluded.

JENNIFER THILTGEN

A study found ulcer scores were significantly lower with an alfalfa diet than with a coastal Bermuda grass hay diet. Ulcers tended to be worse at the end of the Bermuda hay diet study period.

Stapling the Gut

These days, in many species incisions are often closed with staples rather than stitches—and they're not just for external use any more. Christina Ellis, DVM, a veterinarian with Peterson & Smith Equine Hospital in Ocala, Fla., described the use of a TA-90 stapling device to close the large colon following a pelvic flexure enterotomy (opening and removal of large intestinal contents to treat colic).

At Peterson & Smith, at least 200 horses have undergone this procedure since 1983 with no known complications, reported Ellis. The advantages are simplicity and shorter surgical times—the process is approximately 12 minutes faster with the TA-90 device--compared to a hand-sewn, double-layer closure. Disadvantages include only the cost of the equipment (hospital costs are $65 for staple cartridges spanning 9 cm) and the need to learn how to use the device. Multiple staple cartridges can be used to close incisions longer than 9 cm, although this is rarely needed.

The stainless steel staples are left in the colon, becoming part of the healed gut wall, Ellis reported. No known complications or tissue reactions have occurred from this.

"Staple closure is as effective as hand sewing for this procedure, and faster," concluded Ellis.

Reducing Hindgut Acidosis

Acidosis (abnormally high acidity) in the hindgut (the large intestine and colon) can cause a number of problems in horses, including anorexia, colic, laminitis, and stereotypic (continuous, repetitive, and serving no purpose) behaviors such as wood chewing and weaving. Unfortunately, this is often a risk when feeding today's rich concentrate feeds, and it all goes back to the evolution of the horse's digestive system. That system was designed to process large amounts of high-fiber, poor-quality forage, rather than today's richer diets.

Joe Pagan, PhD, president of Kentucky Equine Research in Versailles, Ky.,

presented the results of a study evaluating the efficacy of a protected sodium bicarbonate product in fighting hindgut acidosis. This problem is common in dairy cattle on high-grain diets, he noted, and sodium bicarbonate is often fed to combat the resultant drop in feed intake and milk production.

"Unfortunately, in horses raw sodium bicarbonate never makes it to the hindgut; it just buffers the stomach," he noted. However, Kentucky Equine Research, along with Balchem Corporation, has developed a protected form of sodium bicarbonate (PSB, product name EquiShure) that was the focus of the current study.

Six 5-year-old Thoroughbreds in training on a high-speed treadmill were split into control and treatment groups and studied. One group was fed 168 g of EquiShure (100 g of sodium bicarbonate; the rest is the encapsulation agent) daily for a four-week period, then the other group received the same treatment (the treatment and control groups were swapped for the second study period). All horses received a diet of unfortified sweet feed, timothy hay, and 50 g of loose salt. Blood and fecal samples were collected every two hours for eight hours on Day 15 of each period, and during week four, all horses wore a complete collection harness for five days so fecal and urine contents could be analyzed.

Results Fecal acidity increased in controls by six hours after feeding. In contrast, the horses receiving PSB had no significant changes in fecal acidity during the sampling period. Horses on PSB also had significantly higher absorption of fat and sodium. There was a trend toward increased digestibility of neutral detergent fiber (fiber content), hemicellulose (a plant cell wall polysaccharide), and fat, but these differences were not statistically significant.

"The PSB used in this study was effective in attenuating the hindgut acidosis that resulted from high-grain intakes in exercised Thoroughbreds," concluded Pagan. "More research is needed to evaluate how PSB supplementation affects intestinal epithelial health and integrity."

Risk Factors for Gastric Ulcers in Thoroughbreds

Up to 86% of Australian Thoroughbred racehorses have been reported to have gastric ulcers. Research on which factors most significantly contribute to ulcers was presented by Guy Lester, BVMS, PhD, associate professor of large animal medicine at Murdoch University. This extensive study evaluated 191 variables affecting 402 horses with 37 trainers in several locations across western Australia. Thirty-three percent of the horses were found to have moderate or severe gastric ulceration (defined as a score of 2-3 on an ulcer severity scale of 0-3). Here are some of the factors that increased ulcer risk:

The horse's digestive system was designed to process large amounts of high-fiber, poor-quality forage, rather than today's richer diets

DR. JOE PAGAN

Cribbing/windsucking This was the most significant risk factor at 7.6 times higher risk. Whether cribbing might be a cause or an effect of ulcers is unclear. Other stereotypic (continuous, repetitive, and serving no purpose) behaviors were also correlated with higher ulcer risk.

Location of training Training in an urban environment conferred a greater risk of ulceration (3.9 times higher risk), but it was not retained in the final model. This indicated that it was factors common to this training environment rather than simply training in the city.

Time in training Ulcer risk increased by

a factor of 1.1 for every week in work, independent of the total time a horse spent on the property.

Body condition maintenance Horses that had trouble maintaining weight were 3.4 times more likely to have ulcers. This factor was also correlated to weeks in work.

Having a radio on in the barn Talk radio was correlated with a 3.6-fold increase in ulcer risk, while music radio increased risk 2.8-fold (this statistic brought chuckles from the audience).

Lester noted that radio could be a surrogate factor for a more urban setting (known to increase ulcer risk), and that race radio with constant yelling of race status might, indeed, be more stressful to horses stalled nearby.

Factors decreasing ulcer risk: Training on the property where the horse was housed—3.3 times lower risk.

Turnout with other horses—3.3 times lower risk.

Additional observations: Ulcer prevalence varied widely by region, but management within those regions likely had more of an impact.

Some trainers had no horses with ulcers, while others had ulcers in nearly every horse in the barn.

Horses that were aggressive toward people seemed less likely to have ulcers. "Maybe they know how to manage their stress—they just let it fly," said Lester with a smile.

Failing to race to expectation was highly significant, but was not used in the final model. "Trainers are quite perceptive in identifying clinically affected horses and not racing them," he noted.

Diet did not have much of an impact, but feeding practices didn't vary much.

Gastric ulceration "is a multifactorial disease, and elimination of a single factor may fail to impact disease prevalence," Lester concluded. "Don't just go turn the radio off; it's more complex than that. Variations in the way individuals handle stress and ulceration make it tough to make consistent recommendations."

Alfalfa Hay Reduces Ulcer Severity

Noah Cohen, VMD, PhD, MPH, Dipl. ACVIM, professor of equine medicine at Texas A&M University, discussed a study that found alfalfa hay reduced the severity of ulcers in young, exercising horses.

In this study, 24 Quarter Horse yearlings were kept in small dry lots and fed two different diets for 28 days each, with a 21-day pasture washout period between. The first diet included coastal Bermuda grass hay and a 15% pelleted concentrate, while the other diet included the same amount of alfalfa hay and the same concentrate. All horses were exercised three times per week using a horse exerciser.

Ulcer scores were significantly lower for the alfalfa diet than for the Bermuda hay diet, and the 11 horses in the alfalfa group with ulcers at the beginning of the study all improved their ulcer score by at least two grades. However, one horse went the other direction, developing ulcers while on the alfalfa diet. Only five of the 12 horses starting the Bermuda diet with ulcers had ulcer score improvement, and only two of those improved by the two grades or more. Ulcers tended to be worse at the end of the Bermuda diet period.

Another notable finding was that while ulcer scores didn't change significantly from the end of the Bermuda diet to the end of the pastured washout period, they increased significantly from the end of the alfalfa diet to the end of the washout period.

"So only one of 23 horses fed alfalfa worsened vs. 16 of 24 on coastal Bermuda," Cohen summarized. "Eleven of 12 horses on alfalfa remained ulcer-free compared to only three of 12 on Bermuda."

He cautioned that not all alfalfa is created equal, and it's not yet known whether older horses or those exercising more intensely would see the same benefits.